

Landscape water management is dependent on accurate weather information. Weather conditions affect the rate of evaporation or the amount of water plants need. Accurate weather information can be used to effectively manage watering schedules.

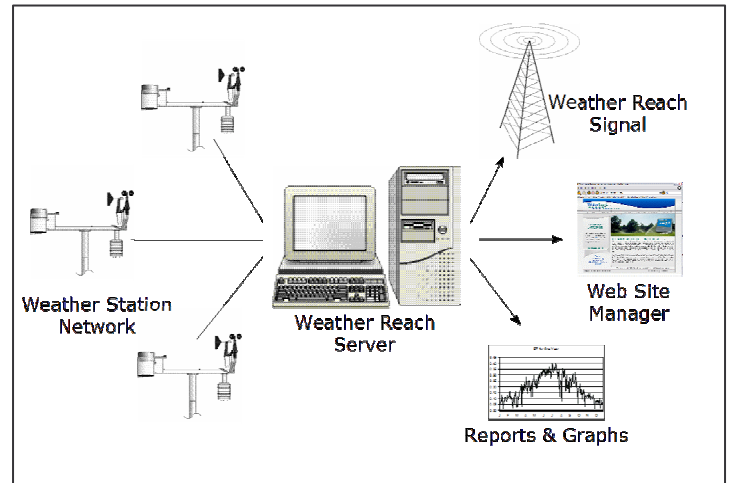
The Weather Reach Water Management System™ uses the Weather Reach Server™ to manage a weather station network. The Weather Reach Server is a software application that retrieves weather data from Campbell Scientific, Inc. (CSI) weather stations. The program stores the data and has several output methods to deliver the information to water managers:

- Weather data is broadcast wirelessly, via paging, to Weather Reach Receivers™ to automatically control landscape sprinkler systems.
- Web sites are automatically updated with current weather conditions and evapotranspiration (ET) data.
- Custom reports and graphs can be generated from archived weather data.
- Export weather and ET data to other programs.

Public agencies, contractors, homeowners associations and others can benefit from the system. Water conservation objectives of public agencies can be advanced. Contractors can improve water management services. Homeowners associations can help the community save money.

There are two ways to implement the Weather Reach Water Management System:

1. Purchase and operate the Weather Reach Server to manage a network of weather stations.
2. Contract with Irrisoft to operate the system. Irrisoft can access the weather stations, monitor the system and provide the signal to Weather Reach Receivers.



*The Weather Reach Server allows weather information and ET to be shared in a variety of formats.*

## Weather Stations

Campbell Scientific, Inc. weather stations are used worldwide for meteorological and climatological monitoring. These weather stations are known for precision measurement capability, rugged construction and reliability. Communication with these weather stations is typically via telephone modem or Internet. The minimum sensor set includes:

- Pyranometer – Solar radiation
- Anemometer – Wind speed
- Tipping Bucket Rain Gauge
- Air temperature
- Relative Humidity

Additional sensors are supported

A weather station must be located in a site that accurately represents the geographic region it serves. Weather patterns, elevation, geography, exposure, obstructions and surrounding landscape all play a role in determining the limits of accurately representing a weather region.

Irrisoft offers a number of prepackaged CSI stations configured for optimum use with the Weather Reach Server. Data can also be accessed from existing compatible CSI weather stations. A custom setup to connect to existing weather station networks is also available. Contact Irrisoft for details.

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## Data Base Management

The server collects and stores weather data. While focused on the needs of the landscape industry additional data can be accessed, including: soil temperature, snowfall, barometric pressure, vapor pressure or other user defined custom fields.

- Communication schedule provides automatic data retrieval.
- Data is stored in 3 data tables: 5 or 15-minute, hourly and daily values.
- Over 300 data fields store raw data and calculated values.
- ET calculations are made using the ASCE "Standardized Reference Evapotranspiration Equation" for short, clipped-grass, prepared by EWRI.

## Data Output

Weather Reach provides weather and evapotranspiration (ET) data in a variety of formats:

- Auto data broadcast via wireless paging to Weather Reach Receivers.
- Auto HTML file builder to provide current information on a website.
- Auto Graphing to include custom graphs on a website.
- Auto data export to make data available for other users.
- Auto FTP to send files to web server.
- Customized reports.

## Weather Reach Receiver

The Weather Reach Receiver uses local weather information to calculate evapotranspiration (ET). It integrates ET, rainfall amounts, and data indicating adverse weather conditions into any standard irrigation controller to adjust irrigation schedules. Weather data is sent automatically every hour to Weather Reach Receivers via the nationwide paging system. The message includes:

- Weather data needed to calculate ET
- Rainfall
- Date and time
- Regional crop coefficient adjustment value.

For emergency purposes, a control signal can be broadcast to compatible Weather Reach Receivers to immediately interrupt irrigation through the next irrigation cycle.

## Computer system requirements

- Recommend 800 MHz or higher.
- Minimum Memory - 256MB RAM – Recommend 512 MB +.
- Hard disk storage – will vary based on the number of weather stations, time and amount of data being collected. The storage can vary from 12 to 70 megabytes per station per year. The program uses approximately 10 megabytes. For example ten weather stations with 2 years of data could take as much as 1.5 gigabyte of storage.
- Monitor – Minimum 800 x 600 - recommend 1024 x 768 resolution 16 bit high color SVGA or higher.
- CD-ROM drive.
- Operating system: Windows NT, 2000 or XP
- Hardware modem – (external recommended) and analog phone line, an optional backup modem is supported.
- Serial port for feedback receiver.
- “Always On” Internet Access.
- FTP or direct access to the web server.
- An uninterruptible power supply.
- Printer must be supported by Windows